

Multiple Choice

1. What is gravity?

- A. a substance
- B. a motion
- C. a force
- D. an object

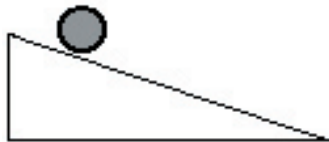
2. What must you do to overcome gravity?

- A. push or pull
- B. fall
- C. add weight
- D. check distance

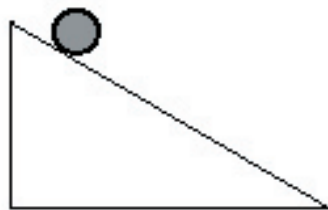
3. Which object would be most difficult to lift against gravity?

- A. a marble
- B. a soccer ball
- C. a chair
- D. a car

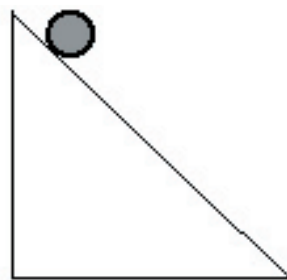
4. Which ball would you expect to have the most speed when it hits the bottom of the ramp?



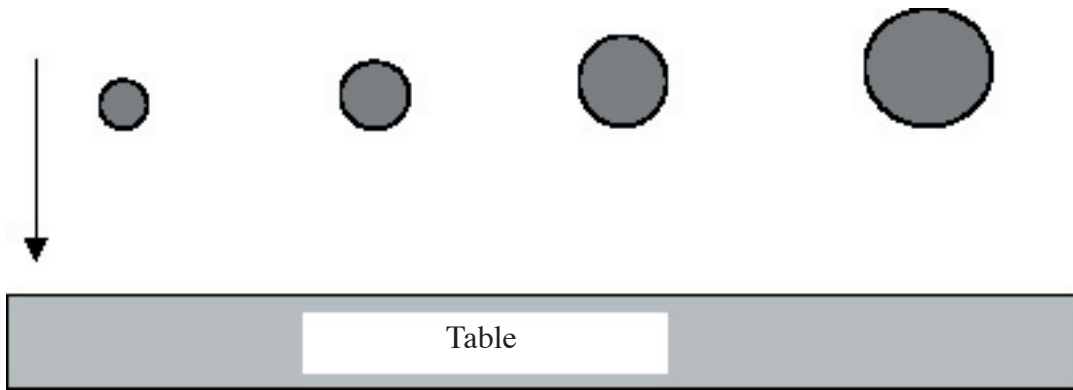
A.



B.



C.



5. The balls shown above are all dropped at the same time onto the table. How will they strike the table?

- A. A will strike first, then B, then C, and then D.
- B. D will strike first, then C, then B, and then A.
- C. B and C will strike first, then A and D.
- D. They will all hit at the same time.

6. How does Earth's gravity affect objects near Earth?

- A. It pushes them away.
- B. It pulls them in.
- C. It makes them larger.
- D. It makes them move faster.

Constructed Response

1. Why is the statement "What goes up, must come down" usually true?

2. A piece of paper is dropped from the table to a floor. What are three questions you could have about this?

Answers to Questions for Grade 3-Standard 4

Multiple Choice

1. C
2. A
3. D
4. C
5. D
6. B

Constructed Response

1. Anything that is pushed upward against gravity is usually pulled back down by Earth's gravity. (There are exceptions that bright students may know of, such as rockets going fast enough to leave Earth's gravity)

2. Questions may include:

What caused the paper to fall downward?

Why is gravity invisible?

What causes gravity?

Do all things have gravity?

Does the size of the paper make any difference in how it falls?

Does the weight of the paper make any difference in how it falls?

Would a pencil fall differently from the paper?

Performance Assessment

Title: How Far?

Activity Description

Students will design a ramp to roll a marble and measure the distance the marble rolls.

Materials Needed:

Each group of students will need a set of materials to build the ramp. Use any items you have. They will need blocks, cans or boxes to get height, and something long and flat (2 rulers taped together works well) for the ramp. Each group of students should have the same materials. Masking tape helps to hold the apparatus together.

A marble

Meter sticks or pre-measured distances on the floor marked with masking tape. Marbles can roll 20 meters on a hard floor, so a hallway may be needed.

Prior to Assessment

Students need to know that gravity is a force that can create motion.

Time Needed:

One hour

Procedure

1. Students should be grouped in teams of 3-4 and given a tray with the materials they will use to construct their ramp. The materials should be the same for each group.
2. Explain to students that the task is to build a ramp that will send the marble the farthest distance along the floor. An assumption is made that the longer the marble goes, the more speed it has.
3. Show students the “launching” area and give them time to build the ramp. Allow them to test it as they work.
4. When teams are ready, have the contest begin. The winning team may go on to challenge other classes within your school.
5. After clean-up, discuss with the students the design of the winning ramp and how gravity affects the speed and downward motion of the marble. The winning ramp will probably be the tallest, launching the marble with the most force due to gravity.

Scoring Guide

1. Students participate in group work.....5pts
2. Students test marbles with ramp.....5 pts
3. Students participate in class discussion.....5 pts